366th Brookhaven Lecture
Investigating Bacterial Neurotoxins

Liz Seubert

A single drop of a deadly toxin produced by Clostridium botulinum bacteria can kill the person who ingests it. By paralyzing the body, including the muscles needed for breathing, the toxin causes death by asphyxiation. Yet, administered correctly in miniscule doses, botulinum can temporarily stop involuntary movement disorders such as face twitching.

To describe the pioneering research at the National Synchrotron Light Source on the structure and function of these neurotoxins, Subramanyam Swaminathan of the Biology Department will give the 366th Brookhaven Lecture on Wednesday, September 19. His talk on “Investigating Bacterial Neurotoxins” will begin at 4 p.m. in Berkner Hall.

In the lecture, Swaminathan will discuss his and colleagues’ research that has resulted in their decyphering the structure of one of the botulinum tox

Subramanyam Swaminathan of the Biology Department investigates the structure and function of neurotoxins.

ins and discovering how it binds to the nerve cells it attacks.

As he will explain, understanding this interaction at the molecular level may lead to the design of vaccines or therapeutic drugs to use against botulinium food poisoning or to counter the threat of biological weapons. Drugs to treat muscular spasms might also be improved, and truncated mutants of the toxin could also be developed as a carrier in other oral vaccines.

Swaminathan earned his Ph.D. in physics at the University of Madras, India. Before joining BNL, he worked as a scientist in Veterans Administration Medical Center, Pittsburgh, where he studied the structure-function relationships of staphylococcal enterotoxins and tetanus neurotoxin.

Coming to BNL as a Chemistry Department research collaborator in 1981-83, Swaminathan then returned for a year as a guest scientist in 1995, moving to the Biology Department in 1996. In May, 1997, Swaminathan joined the Biology staff as a scientist. His research interests focus on the structure-function relationship in macromolecules. In addition to his work on bacterial toxins, he is involved in Biology's structural genomics and Lyme disease projects.

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